October 2024

PUBLISHED COMMENTS ON MACHINA'S RESEARCH

Does not include anything published during my period as a journal's co-editor, or anything from books or special issues of journals for which I was a co-editor or guest co-editor.

"And, as I go to press, I see that Mark Machina, 1981, 1982, has already spelled out how it is to be done." Paul Samuelson, *Foundations of Economic Analysis, Enlarged Edition,* 1983, 518.

"The most important member of the first group is Machina (1982)…" John Hey, *Economic Journal,* 1983, 93 (Suppl.), 136.

"Mark Machina has suggested a game called 'guess the lowest positive integer' which drives this point home forcefully." Douglas Bernheim, *Econometrica,* 1984, 52, 1021.

"For an illuminating analysis of the distinction between the 'actual psychological reality' of a person's feelings about the choices (e.g., Allais'), and the 'psychological values' assigned by the expected utility procedure, see Machina (1981)." Amartya Sen, *Theory and Decision*, 1985, 18(2), 124.

"Kahneman and Tversky [1979] and Machina [1982], for example, may provide descriptive accounts of decision making that are more satisfactory than MEU," (MEU = maximize expected utility). Paul Weirich, *British Journal for the Philosophy of Science,* 1986, 37, 436.

"This has called forth some new theory, notably Machina's elegant "generalized" expected utility theory (Machina 1982)…" Thomas Marschak, in W. Heller, R. Starr and D. Starrett, eds., *Uncertainty, Information and Communication: Essays in Honor of Kenneth J. Arrow, Vol.III*, Cambridge Univ. Press, 1986, 129.

"Developing an insight of Machina's…" Graham Loomes and Robert Sugden, *Journal of Economic Theory,* 1987, 41, 270.

"In a paper well on its way to becoming a milestone, Machina (1982) ..." Menahem Yaari, *Econometrica,* 1987, 55, 111.

"…derived from the empirically ascertained infringements of the Neumann-Morgenstern axioms, as well as the Regret Theory or Machina's fundamental contribution." Karl Aiginger, *Production and Decision Theory under Uncertainty*, Basil Blackwell, 1987, p.6.

"Contributions by Howard Raiffa, Isaac Levi, Richard Jeffrey, Kahneman and Tversky, Mark Machina, and others are indeed extremely interesting, and they are also of immediate and far-reaching relevance to social choice theory…" Amartya Sen, as quoted in Wulf Gaertner and Prasanta Pattanaik, *Social Choice and Welfare,* 1988, 5, 79.

"One of the most interesting developments in economic theory in the 1980's is the exploration of non-additive expected utility theories by Machina, Chew and Yaari." Robert Becker, Review of *Studies in Mathematical Economics,* ed. by Stanley Reiter, MAA, 1986, *American Mathematical Monthly,* 1988, 95, 271.

"Chew and Machina have done this expertly with various modifications of independence. These modifications account for some but not all of the violations." Vernon Smith, *Journal of Economic Perspectives,* 1989, 3(1), 164.

"The ongoing debate on the correct modelling of economic behaviour under risk makes heavy expositional use of the 'Marschak-Machina Triangle'." John Hey and Elisabetta Strazzera, *Journal of Behavioral Decision Making*, 1989, 2(4), 239.

"Even more striking is the example of Machina (1981)…" Peter Hammond, *Econometrica,* 1989, 57, 1447.

"Mark Machina and others have written about the current status of the expected utility hypothesis and it's not as secure I think, as Savage and de Finetti believed earlier." Peter Rossi and Arnold Zellner, *Econometric Theory*, 1989, 5(2), 301.

"The recent literature on cognitive psychology (e. g., Kenneth Arrow 1982; Daniel Kahneman, Paul Slovic, and Amos Tversky 1982; Robin Hogarth and Melvin Reder 1987; Mark Machina 1987) provides a promising avenue for future research." Stephen LeRoy, *Journal of Economic Literature,* 1989, 27(4), 1616.

"In research that has justifiably been called a milestone, Machina demonstrated that ..." Ronald Hilton, *Journal of Economic Behavior and Organization,* 1990, 13 (2), 233.

"Mark Machina's work, and Amos Tversky and Daniel Kahneman's too, has been aimed at developing an alternative to expected utility theory that fits people's behavior more closely. This is an important scientific project." John Broome, in Karen Cook and Margaret Levi (eds.) *The Limits of Rationality*, University of Chicago Press, 1990, 143.

"…Machina argues persuasively that rational choice theory can be extended in nonstandard directions, if necessary." John Riley, Review of *The Limits to Rationality*, ed. by Karen Cook and Margaret Levi, *Ethics,* 1992, 102 (4), 859.

"Since the pioneering work of Machina (1982) many different alternative models of choice under risk have been proposed" Peter Kischka and Clemens Puppe, *Methods and Models of Operations Research,* 1992, 36, 126.

""Note that respected economists such as Machina are…" Daniel Hausman, *The Inexact and Separate Science of Economics,* Cambridge Univ. Press 1992, 240.

Undoubtedly the most influential work in the field has been that of Machina" John Quiggin, *Generalized Expected Utility: The Rank-Dependent Model,* Kluwer Academic Publishers, 1993, 55.

"In a remarkable series of essays, Machina (1982, 1987, 1989, 1990) has ..." Partha Dasgupta, *An Inquiry into Well-Being and Destitution,* Oxford University Press, 1993, 198.

"Since 1979 there have been two phases of development in what is now called nonexpected utility theory… In Phase I, in economics, Machina clarified the restrictions imposed by linearity (1982) and showed the robustness of more general forms of EU…. In psychology, Kahneman & Tversky (1979) offered prospect theory (PT)…" Lola Lopes, *Annual Review of Psychology,* 1994, 45, 202.

"Today we find some important economists taking the issue seriously, even formulating theories that allow for imperfect rationality or weaken established hypotheses (cf. Mark Machina 1982)." Shira Lewin, *Journal of Economic Literature,* 1996, 34(3), 1319.

"The highlight of the book is the first paper by Machina ('Nonexpected Utility and the Robustness of the Classical Insurance Paradigm')" T. Sinha and J. Sounderpandian, "Review of *Nonexpected Utility and Risk Management*, ed. by Christian Gollier and Mark Machina." *Journal of Risk and Insurance*, 1997, 64, 765.

"Machina's (1982) Generalised Expected Utility Theory is an influential example." Graham Loomes, *Economic Journal,* 1998, 108 (447), 478.

"Machina's (1982) seminal article showed that many of the desirable properties of expected-utility preferences carried over to more general preferences under plausible conditions." Robert Chambers and John Quiggin, *Uncertainty, Production, Choice, and Agency: The State Contingent Approach,* Cambridge University Press, 2000, 82.

"Although the probability triangle had appeared in the literature many years before (see Jacob Marschak (1950) Mark Machina's use of it in the 1980's … popularized it to the extent that some have called this diagram the 'Machina triangle'." Chris Starmer, *Journal of Economic Literature,* 2000, 38, 340, n.12.

"The most important class of preferences exhibiting probabilistic beliefs are the probabilistically sophisticated preferences of Machina and Schmeidler (1992)." Massimo Marinacci, *Econometrica,* 2002, 70, 758.

"The seminal analysis of Machina (1982) established that …" John Quiggin, *Economic Theory*, 2003, 22(3), 608.

"Quiggin (1991), Quiggin and Chambers [(1998)], Chambers and Quiggin [(2003)], and Machina (1989) have made important contributions to developing the comparative statics implications of GEU [generalized expected utility] models for risky choice." David Buschena, *American Journal of Agricultural Economics*, 85(5), 2003, 1245.

"Because of the appealing implications of Machina's (1982a) results, …" Ulrich Schmidt, in Salvador Barberà, Peter J. Hammond and Christian Seidl (eds.), *Handbook of Utility Theory, Volume 2: Extensions*, Springer Nature, 2004, 802

"Readers are directed to Machina's (6,19) pictorial representation of this scenario. Indeed, Machina's use of probability triangles popularized the concept to the extent that the representation is sometimes referred to as the 'Machina Triangle'." John List and Michael Haigh, *Proceedings of the National Academy of Science*, 2005, 102, 945.

"In this section we characterize variational preferences that are probabilistically sophisticated, an important property of preferences introduced by Machina and Schmeidler (1992)…" Fabio Maccheroni, Massimo Marinacci and Aldo Rustichini, *Econometrica,* 2006, 74, 1461.

"Is it possible to separate subjective probability from the expected utility criterion? Machina and Schmeidler (1992) propose an elegant solution." Igor Kopylov, *Handbook of Probability: Theory and Applications*, Sage Publications 2008, 46.

"Another influential paper to initiate new models was Machina (1982)…" "Machina's examples thus pose a general challenge to the study of ambiguity and not just to rank dependence…," Peter Wakker, *Prospect Theory: For Risk and Uncertainty,* Cambridge University Press 2010, pp.143, 351.

"… the insights of Allais (1953) and Ellsberg (1961, 2001), followed up by the work of Machina (1982), Schmeidler (1989), and Gilboa and Schmeidler (1989), led to a complete reconsideration of the classical notion of expected utility and subjective probability…" Eddie Dekel and Barton Lipman, *Annual Review of Economics,* 2010, 2, 258.

"Such relevance is the essence of Machina's (1989) resolute choice. Thus process fairness gives a convincing application of his idea, formalizing his Parental Example…" Stefan T. Trautmann and Peter P. Wakker, *Economics Letters,* 2010, 109, 188.

"Machina (2009) provided a particularly clear test, …" Peter Wakker, *Prospect Theory: For Risk and Uncertainty,* Cambridge University Press 2010, 352.

"If Kahneman and Tversky's paper was an empirical tour de force, Machina's paper was a masterwork in the nuanced application of the calculus." Jonathan Leland, *Journal of Socio-Economics,* 2010, 39, 571.

"Since the seminal paper by Machina and Schmeidler (1992)…," "…in the famous example of 'Machina's Mother'…", Marzena Rostek, *Review of Economic Studies*, 2010, 77, pp.348, 369.

"Wang (1993) extends the path-breaking work of Machina (1982)…," Henry Chiu, *Oxford Economic Papers* 2011, 63(2), 402.

"…the impact of Machina's examples is not restricted to the model initially targeted. His examples pose difficulties not only for CEU, but also for the four other most popular and widely used models of ambiguity-averse preferences." Aurélien Baillon, Olivier L'Haridon, and Laetitia Placido, *American Economic Review*, 2011, 101(4), 1547.

"Suitable generalizations of expected utility theory exist which attempt to solve the Ellsberg paradox, but none of them provides a satisfactory solution of the Machina paradox." Diederik Aerts, Sandro Sozzo and Jocelyn Tapia, in Jerome R. Busemeyer et al. (eds.): *Quantum Interaction: Lecture Notes in Computer Science*, *Vol. 7620*, Springer-Verlag, 2012, 48.

"So far, the most comprehensive attempt to submit classical results in insurance economics to a robustness test by shifting from expected utility to nonexpected utility can be found in Machina (1995)." Henri Louberg, in Georges Dionne (ed.), *Handbook of Insurance, 2nd Ed.* Springer, 2013, 12.

"In the problems to follow, I adopt the ingenious construction of Machina and Pratt (1997) for the one difficult step." David Kreps, *Microeconomics Foundations I: Choice and Competitive Markets,* Princeton University Press, 2013, 140.

"First suggested in Machina (1985), models in this class proposed different reasons for the desire to randomize…" Marina Agranov and Pietro Ortoleva, *Journal of Political Economy*, 2017, 125(1), 47.

"The seminal Machina (1982) paper showed that…," "Machina's results stimulated many studies of nonexpected utility preferences that…" Simone Cerreia-Vioglio, Fabio Maccheroni and Massimo Marinacci, *Management Science*, 2017, 63(4), 1098.

"Decision theorists have taken two different approaches to accommodating such evidence. One is to treat it as evidence of a *preference to randomise*. This approach is advocated most famously by Machina (1985)." Matthew Ryan, *Journal of Mathematical Economics*, 2017, 70, 176.

"The Machina thought experiments pose to major non-expected utility models challenges that are similar to those posed by the Ellsberg thought experiments to subjective expected utility theory," Diederik Aerts, Suzette Geriente, Catarina Moreira and Sandro Sozzo, *Journal of Mathematical Economics,* 2018, 78, 176.

"Some well-known paradoxes in decision making (e.g., the Allais paradox, the St. Petersburg paradox, the Ellsberg paradox, and the Machina paradox) reveal that choices conventional expected utility theory predicts could be inconsistent with empirical observations." Wenjun Ma, et al., *Thirty-Second AAAI Conference on Artificial Intelligence*, 2018, AAAI-18, 687.

"It is worth noting that Machina (1985) already alluded to the idea that with strictly convex preferences, one may expect either version of Stochastic Transitivity to be violated," Simone Cerreia-Vioglio, David Dillenberger, Pietro Ortoleva and Gil Riella, *American Economic Review* 2019, 109(7), 2434.

"The most significant exception relates to the normative dynamic argument that some decision theorist, following Machina (1989), have identified in the Allais paradox." Philippe Mongin, *Economics and Philosophy,* 2019, 35, 424.

"Machina (2009) developed a series of elegant experiments that challenge the CEU model." Adam Dominaik and Jean-Philippe Lefort, *Management Science,* 2021, 67(7), 4316.

"The Ellsberg and Machina paradoxes have somewhat discommoded canonical decision theory and several putative alternatives." Keiran Sharpe, *Theory and Decision*, 2023, 95, 539.

"The strongest counterexample to rank dependence that I am aware of is Machina's (2009) reflection example, confirmed empirically by l'Haridon and Placido (2010)" Peter Wakker, *Journal of Behavioral and Experimental Economics*, 2023, 107, 101950.

"One of the most prominent nonlinear utility functions was introduced in a seminal paper by Machina (1982), who…" Shaowei Ke and Chen Zhao, *Journal of Mathematical Economics*, 2024, 113, 103003.